



Aviation Education News



Distributed Quarterly to Promote Aviation Education and Awareness in Virginia

August 1999

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NASA CONNECT Flies Into Its Third Season



The 1999-2000 NASA CONNECT series (seven 30-minute programs via television and the Internet) shows how NASA engineers and scientists use mathematics and science every day. These programs emphasize national mathematics and science standards, information literacy standards, and national computer technology standards. NASA CONNECT helps increase scientific literacy and improves the math and science competencies of upper elementary and middle school students.

Produced by the NASA Langley Research Center's Office of Education in Hampton, Virginia, this award-winning, integrated math and science instructional program (1) shows students the application of math and science on the job; (2) presents math and science as processes requiring creativity, critical thinking and problem-solving skills; (3) shows the use of workplace math and science as a collaborative process; (4) raises student awareness of math and science careers; and (5) overcomes stereotypes by presenting women and minorities performing challenging engineering and science tasks.

Each program features two schools and includes an educator-parent lesson guide that has a hands-on activity and a web-based component that complement and extend the lesson, establishing a connection between the home and the classroom. The web-based component, easily integrated into local, regional, and statewide instructional technology initiatives, allows students to interact with engineers and scientists and gives homebound and home-schooled children access to the same resources as classroom students.

NASA CONNECT is **FREE** to educators who register -- no fees, licensing agreements or copyrights. Off-air rights are granted in perpetuity. Educators can copy the lesson materials and tape the broadcasts. More information; including broadcast times, dates, and **how to register**; is available at: <http://edu.larc.nasa.gov/connect/>.

Program Listings for the 1999-2000 NASA CONNECT Series

The Measurement of All Things: Tools of the Aeronautics Trade
Story line: Students will explore the concept of measurement and the tools used in measuring things, while learning "what" and "how" engineers and scientists use measurement during the process of developing, designing, and testing airplanes.

The Measurement of All Things: Atmospheric Detectives
Story line: Students will learn how scientists use satellites, lasers, optical detectors, and wavelengths of light to measure the presence of certain elements and compounds in the Earth's atmosphere.

PRESIDENT'S NOTES:

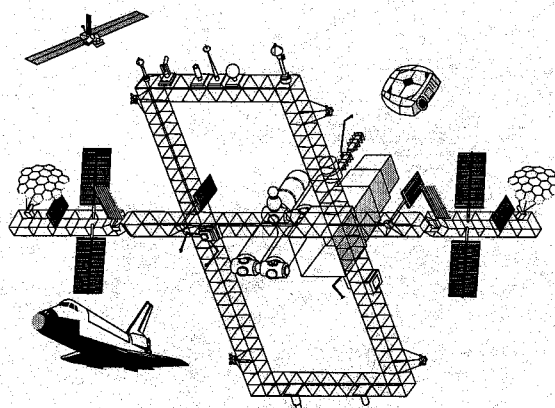
NASA Langley will again try to help educate the general population about our programs and activities by having interactive and interesting exhibits at the Virginia State Fair, September 23- October 3, 1999. Langley's exhibit this year will include the following displays:

Low Visibility Landing and Surface Operations (LVLASO) cockpit
General Aviation
Infrared Camera
"Feel the Lift"

Send Your Name to Mars exhibits for children
International Space Station
Virginia Air and Space Center (educational demos)
Langley's FIRST NASA Knight's Robotics team
Possible appearance by an Astronaut.

NASA Langley, was again host for two NASA Education Workshops (NEW) programs for twenty-five teachers each. NEW K-6, was a 2-week elementary teacher work shop, and NEW Rural was a K-12 teacher 2-week workshop where participants spent a day in a flight school, hosted by Sky World Flight Training Center at the Newport News - Williamsburg airport, led by Mr. Eric Sitzler, Chief Flight Instructor. The teachers were able to obtain hands-on training that they all readily agreed would be incorporated into their curriculum. Most were not aware that this type of service/training at an HBO was readily available right in their own "backyards" in almost every area of their states. The balance of both programs targeted the four NASA enterprises where instructors provided hands-on/minds-on standards of learning based activities and instruction.

Peter D. Thomas
<http://edu.larc.nasa.gov/>



VASEF AVIATION EDUCATION NEWS is published quarterly in support of aviation education in the Commonwealth of Virginia by the Virginia Department of Aviation

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VASEF NEWS Editor: Betty Wilson

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<http://www.doav.state.va.us> (Internet)



VASEF PURPOSE

The Forum is a non-profit organization to promote and foster aviation and space education among public and private schools, colleges and universities, and community and civic groups, and to promote increased public understanding of aviation and space and their economic, social, and career values in our society and in the Commonwealth of Virginia.

Year 2000 International Aviation Art Contest

"FLIGHT INTO THE FUTURE"

The International Aviation Art Contest is sponsored each year by the National Aeronautic Association, National Association of State Aviation Officials, National Aeronautics and Space Administration and Federal Aviation Administration, in cooperation with the Federation Aeronautique Internationale (FAI), to motivate and encourage young people (ages 6-17) of FAI-member nations to become more familiar with and participate in aeronautics, engineering and science.

Eligibility: All children in the age groups shown below are encouraged to participate in the Contest, even if they are related to officials or employees of the FAI or any of its member organizations.

Age Groups: Entries will be judged in 3 classes (determined by the age of the entrant on December 31, 1999).

I. Ages 6-9, II. Ages 10-13, and III. Ages 14-17.

Format: Artwork size should be 11 x 17. Due to international criteria 8.5 x 11 entries are not eligible. Artwork must not be framed, laminated, mounted, or outlined with borders.

Medium: All artwork must be hand made using any of the following media: Watercolor, acrylic or oil paints, indelible markers, colored pencils, felt-tip pens, soft ball-point pens, indelible ink, Crayola or similar indelible mediums.

The following are NOT permitted: Pencil, charcoal or other non-permanent medium, computer-generated, or collage work involving the use of photocopies.

Certification: Parent, guardian, or art teacher must certify authenticity of artwork. (U.S. judges will issue certificates of authenticity for national winners for the international competition.)

Reproduction Rights: Once received, entries will become and remain the property of the Federation Aeronautique Internationale (FAI) or state sponsor and may be used for a variety of purposes.

State Awards: Entries in each category will be judged and state winners and

runners-up selected. Winners will receive a certificate and recognition from their state. First place artwork will be forwarded to Washington, D. C. to participate in the national competition.

National Awards: A national winner and two runners-up will be selected from each age group. All national winners will receive certificates, ribbons and a framed photograph of their artwork. The first

place national winners will also receive a professional work of art compliments of the American Society of Aviation Artists.

International Winners: The national winners and two runners-up in each age group will be forwarded to FAI headquarters for international judging. Winners of the International Competition will receive certificates and medals of gold, silver, and bronze.

Certificate of Authenticity

Name: _____

Date of Birth: _____ Age Group (Age as of 12/31/99) _____

Address: _____

City: _____ State: _____ Zip: _____

School Name: _____

Address: _____

City: _____ State: _____ Zip: _____

School Phone Number: _____

I/We certify that this is the original and unassisted artwork of

(name of artist)

Signature: _____

Print Name Here: _____

Certificate signed by artist's ____ teacher, ____ parent, ____ guardian

Entries must be postmarked by February 4, 2000

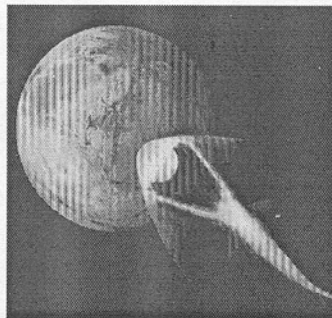
Mail to: Virginia Department of Aviation, Attn: Betty P. Wilson

5702 Gulfstream Road, Richmond, Virginia 23250-2422

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Geometry of Exploration: Water Below the Surface of Mars?

Story line: Students will learn how engineers and scientists will use geometry in the solar system to navigate a spacecraft to Mars.



Geometry of Exploration: Wings Over Mars (tentative)

Story line: Students will learn about the geometric shapes and materials of the Mars Airplane, how the atmospheres of Mars and Earth compare, and how the aerodynamic forces of the Mars Airplane differ from those of the Wright Flyer.

Proportionality: The X-Plane Generation

Story line: Students will learn why scaling and proportion are important factors in aircraft design.



Proportionality: Modeling the Future

Story line: Students will continue to learn why scaling and proportion are important in the design of small, affordable transportation systems.

Algebra: Mirror, Mirror on the Universe

Story line: Students will learn how algebra is used to explore the universe.

Note: NASA CONNECT is carried by all five of Virginia's PBS stations. Broadcast schedules are different for each station, so please refer to the NASA CONNECT web site for your local listings - <http://edu.larc.nasa.gov/connect/>.

1999 VAOC Scholarship Winner Receives Award

James Dixon, a student at Cave Spring High School in Roanoke, was the recipient of the 1999 Virginia Airport Operators Council (VAOC) Aviation Scholarship Award.

Jacqueline L. Shuck, Executive Director of the Roanoke Regional Airport, presented the award on behalf of VAOC at Cave Spring's school award ceremony. Mr. Dixon received a plaque, letter, and scholarship check in the amount of \$2,000.00.

He will be entering Georgia Tech this fall as a freshman in the aeronautical engineering program.

Applications for the Year 2000 VAOC Aviation Scholarship Award will be distributed to high school guidance departments in September.

Design Contest Winners Include Virginia Schools

A three-university team from the University of Virginia in Charlottesville, VA; Old Dominion University in Hampton, VA; and Pratt Institute in Brooklyn, NY were awarded third place in the 1998-99 National General Aviation Design Competition.

The 21 students will share a \$1,000 prize for a highly innovative design known as the "Yeah Man," which has two tail booms with vertical tails. Tested in the Full Scale Wind Tunnel at NASA Langley Research Center in Hampton, VA, the unusual design showed good aerodynamic characteristics.

Professors Jim McDaniel of the University of Virginia, Colin Britcher of Old Dominion University and Martin Skalski of Pratt Institute served as faculty advisors to the team.

National Air and Space Museum Calendar

Friday, September 24, 1999

Special Lecture

"Around the World in 20 Days: The Voyage of the Breitling Orbiter 3"

Bertrand Piccard and Brian Jones

On March 20, 1999, Bertrand Piccard and Brian Jones became the first balloonists to circumnavigate the globe. From their start in the Swiss Alps to their landing on the sands of the southwestern Sahara, Piccard and Jones traveled 19 days, 21 hours, and 55 minutes inside the Breitling Orbiter 3 gondola. At this free public lecture, the team will discuss their amazing accomplishment. Tickets for this lecture will be available beginning Monday, August 16 through PROTIX by calling (800) 529-2440, or at various walk-up outlets throughout the metro area, or through their web site at www.protix.com. There is no charge from the Smithsonian for these tickets, but service charges from Protix will apply.

Saturday, September 25, 1999

Monthly Star Lecture

"Autumn Starlights"

The air cools and the nights lengthen as we enter autumn. Steve Mitch, Planetarium Director, Benedum Planetarium, Wheeling WV, is your guide through a "dome-on" exercise to our October night skies. Then try what you learn under the real night sky!

Thursday, October 14

GE Aviation Lecture Series

General Chuck Yeager

Chuck Yeager, the first person to break the sound barrier, will give his annual lecture here on Thursday, October 14, the anniversary of his historic flight. Tickets for this lecture will be available beginning Monday, September 13 through Protix by calling (800) 529-2440, or at various walk-up outlets throughout the metro area, or through their web site at www.protix.com. There is no charge from the Smithsonian for these tickets, but service charges from Protix will apply.

Thursday, November 18, 1999

GE Aviation Lecture Series

"Vipers in the Storm: Diary of a Gulf War Fighter Pilot"

Captain Keith Rosenkranz, Top Gun in F-16 fighter training, and author of *Vipers in the Storm*, flew 30 combat missions for the 388th Tactical Fighter Wing during the Gulf War. Captain Rosenkranz will recount his journey to Iraq and his daring nighttime missions. Admission for this lecture is free and there are no tickets or reservations.

Paul E. Garber Preservation, Restoration, and Storage Facility

Get a behind-the-scenes look at the restoration workshop in Suitland, Maryland, where skilled craftsmen restore aircraft, satellites, and flight-related artifacts. Free tours last approximately three hours. 10:00 a.m., Monday through Friday; 10:00 a.m. and 1:00 p.m. Saturday and Sunday. For reservations, call (202) 357-1400 (voice) or (202) 357-1505 (TTY).

For general information call (202) 357-2700 (voice) or (202) 357-1729 (TTY).

NORFOLK STATE UNIVERSITY FLIGHT TEAM ATTENDS NATIONAL FLIGHT COMPETITION NSU COMPETITOR PLACES FIRST IN WOMEN'S ACHIEVEMENT NSU NAVY PILOT ALUMNUS ATTENDS

The Norfolk State University (NSU) Aviation Team for the fourth year in a row competed at National Intercollegiate Flying Association (NIFA) annual Safety Conference. They competed with 29 other top college teams from around the country at Kansas State University, Salina, KS, April 26 to May 1, 1999. The competing teams earned their invitation to the Conference by placing in the top three in their region. Norfolk State received an invitation to the Safety Conference as a result of their performance in the Region Ten competition held last fall at Williamsburg/Jamestown Airport. Region Ten includes: Virginia, West Virginia, Maryland and North Carolina. At the National competition, Norfolk State competed with teams from universities and colleges with large and long established aviation programs such as: Ohio State, Purdue, University of Nebraska, University of Illinois, Embry-Riddle, U.S. Air Force Academy, U.S. Naval Academy, University of North Dakota, Kansas State University and Western Michigan University.

In spite of the tough competition from the larger aviation schools, Norfolk State's Barbara Nesbitt, the Team Captain and Region Ten "top pilot", placed first in Women's Achievement. This award comes with a \$500 cash award given by the 99's, the Women Pilots Organization founded by Amelia Earhart. Barbara was also recognized as the Region Ten Top Pilot, which comes with a \$500 check from the Airline Pilots Association. Other Team members, Robert Null and John Bonanno, contributed to the safe and efficient performance of the Norfolk State Flight Team.

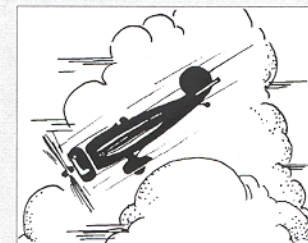
One of the highlights of the competition was the attendance of a NSU Aviation Program alumnus, and previous Flight Team captain, Lieutenant (junior grade) James Rowbottom, USN, with his Navy airplane, the E-6A (Boeing 707 derivative), airborne command post. James and other E-6A crew members gave tours of the large aircraft to most of the competitors. James was able to land at Salina during a routine in-flight refueling training mission. His squadron is based at nearby Tinker Air Force Base. It was a rare opportunity to showcase Norfolk State and the US Navy.

The Team advisor and coach is Darryl Stubbs, Captain, USN (ret).

NSU is looking for students interested in aviation to join this growing and exciting new program. Call Darryl Stubbs at (757) 823-9447 or email d_stubbs@vger.nsu.edu for information.

E-6A (Boeing 707 derivative) Airborne Command Post

*Left to Right: Robert Null,
Barbara Nesbitt, LTJg James
Rowbottom, and John (Tony)
Bonanno.*



VIRGINIA AVIATION MUSEUM CALENDAR

September 16, 1999

Guest Speakers Series

Robert Walton

Robert Walton of the Virginia Air National Guard will give a program on the history of the 192nd Fighter Group. From the P-47 Thunderbolt to the F-16 Fighting Falcon, the VANG has been a presence on Richmond International Airport since 1947.

October 21, 1999

Guest Speakers Series

Capt. John W. Thornton

Capt. John W. Thornton, USN (ret.), author of *Believed to Be Alive*, will give a first hand account of a Navy pilot's heroic exploits in combat and captivity during the Korean War.

November 18, 1999

Guest Speakers Series

Tom Alison

Tom Alison, Chief of Collections for the National Air and Space Museum, and former SR-71 pilot will talk about his experiences flying the Blackbird. Allison flew the Blackbird from 1974 to 1981 at California's Beale Air Force Base and later became Director of Wing Operations until the Blackbirds were retired in 1990.

Guest Speakers Series Programs begin at 7:00 p.m. in the Benn Theater. Please call (804) 236-3622 to confirm date and time. The Virginia Aviation Museum is open daily from 9:30 a.m. to 5:00 p.m. Admission is \$5.00 for adults, \$4.00 for seniors and \$3.00 for youth. It is located at Richmond International Airport, 5701 Huntsman Road, Richmond International Airport, Virginia 23250. For further information on events and schedules, call (804) 236-3622.

Aviation Education Corner

BAG BALLOONS

Objectives

The student will:
 Demonstrate that heat can change air.
 Determine that hot air rises.
 Construct a working model of a hot air balloon.

Standards and Skills

Science
 Science as Inquiry
 Science and Technology

Mathematics
 Estimation

Science Processing Skills
 Communicating
 Observing

Background

Hot air balloons are one type of aircraft. (The four categories of aircraft are airplanes, gliders, rotorcraft, and hot air balloons.) In this activity, students construct a working model of a hot air balloon.

There are two ways a balloon can rise: it can (1) be filled with a gas that is lighter than air, such as helium, or (2) it can be inflated with air that is heated sufficiently to make it "lighter" than the air outside the balloon.

Helium is the second-lightest element, and the main sources for helium are natural gas fields (especially those in the states of Texas, Oklahoma, and Kansas). Heating air makes it less dense, rendering it essentially "lighter." Gas balloons and hot air balloons float because they are lighter than the air they displace.

Discussion

1. Have the students identify the different parts of the hot air balloon: plastic bag -- hot air balloon; hair dryer -- heat source; paper clips -- weights for balance and stability.
2. Ask the students to explain why the hot air balloon works. *The hot air balloon rises when the air inside the balloon becomes heated. The heated air is lighter than the classroom air and enables the balloon to float.*
3. Ask the students to tell how hot air balloons are different from balloons filled with helium. *Helium is a gas that is lighter than air, even when it's not heated. Helium, though, just like heated air, floats in the surrounding air because it's lighter. Helium should not be confused with hydrogen, which is an inflammable gas that was often used in balloons and airships until the explosion of the airship Hindenburg in 1937.*

Assessment

Using their actual models, have the students explain why their hot air balloons rise.

Extensions

1. Have the students construct another hot air balloon using different sizes and types of plastic bags.
2. Have students experiment with paper clips -- different sizes and numbers -- to see the effects of weight on their model balloons.
3. Have the students research the part that balloons played in the history of flight.

Materials

Plastic bag ("dry cleaners" bag or 5-gallon trash bag)
 Paper clips (used for weight)
 Small pieces of paper or stickers (decorations)
 String
 One hair dryer per classroom (heat source)
 Party balloons

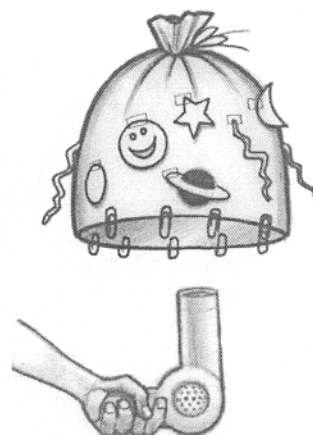
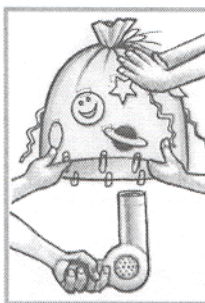
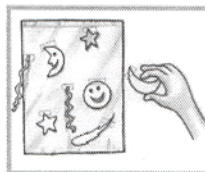
Preparation

Show students pictures of hot air balloons. Ask the students to share their ideas about how the balloons rise. Also ask students to share what they know about hot air balloons, or what they think about the uses of hot air balloons.

Activity

1. Divide the class into groups of four, and provide each team with a set of materials.
2. Have the students decorate their plastic bags. Decorations should be small and light, such as small scraps of paper or stickers.
3. Have the students tie a string around the top of the plastic bag.
4. Add paper clips evenly spaced around the bottom of the plastic bag.
5. Have the students hold the plastic bag over the hair dryer (on the high setting) and let the plastic bag fill with hot air.
6. The plastic bag becomes buoyant as it fills with hot air. When the students feel the bag is tugging, have them release it. *The hot air inside the balloon is lighter than the air in the classroom and begins to float.*

4. Have the students role play a reporter interviewing one of the Montgolfier brothers.



The above activity is from AERONAUTICS - An Educator's Guide with Activities in Science, Mathematics, and Technology Education produced by NASA for Grades K-4.

State Aviation Department Participates in Summer Events

This summer, the Virginia Department of Aviation once again participated in Flight Day at the Virginia Aviation Museum and the Virginia State EAA Fly-In.

Flight Day, held June 19 and 20 at the Virginia Aviation Museum, featured aviation-related organizations and activities for the whole family. Additional participants this year included the Richmond Area Radio Control Club, the Richmond Chapter of the International Plastic Modelers Society, the Ninety-nines (women pilots), Experimental Aircraft Association Chapter 231, Wingnuts (an aircraft club from Chesterfield), an Army Blackhawk helicopter, support from the Virginia Air National Guard, and even a historic fire engine display.



Kelly Kennedy as Jackie Cochran.

A special feature this year was the performance of a living history piece about famous aviatrix Jacqueline Cochran. Entitled: "A Blast Beyond the Sound Barrier: The Jackie Cochran Story." It was written by Dylan Roahrig, produced by special arrangement with The Children's Museum of Indianapolis, and featured actress Kelly Kennedy.

The third annual **Virginia State EAA Fly-In** took place on June 26 and 27 at the Petersburg Airport. The Virginia Department of Aviation introduced its new "Virginia is for Flying Lovers" trailer at this event. It has room for an aviation display on its back wall and a counter from which free aviation-related materials may be disseminated.

A highlight of the Fly-In this year was the introduction of an airshow which took place each afternoon. Attendance, especially on Saturday, was very good this year.



SCIENCE MUSEUM OF VIRGINIA CALENDAR

IMAX FILMS:

MYSTERIES OF EGYPT (May 22-December 3)

EVEREST (May 22-December 3)

PLANETARIUM SHOW:

NIGHT SKY (March 28-December 3)

STARDATE: ANCIENT HORIZONS (May 22-December 3)

LIVESKY: Informal "live" planetarium presentation of the month's celestial events. Third Friday of every month.

SKYWATCH: Third Friday of every month (weather permitting) on the front lawn.

24-Hour Information: (804) 367-0000

Box Office: (804) 367-1080

24-Hour Skywatch Information: (804) 367-8277

24-Hour TDD Information: (804) 367-9760

General Information - TDD: (804) 367-6552

Group Scheduling: (804) 367-6552

Home Page: <http://www.smv.mus.va.us>

VIRGINIA AIR AND SPACE CENTER CALENDAR

VISITING EXHIBITS:

BUG'S EYE VIEW Opening Sept. 25, 1999

THE ATOMS FAMILY Opening Jan. 24, 2000

IMAX FILMS:

THRILL RIDE: THE SCIENCE OF FUN thru Sept. 1999

MYSTERIES OF EGYPT thru Sept. 1999

AMAZON Opening Oct. 15, 1999

STAR STATION ONE EDUCATION

CENTER - VASC has been chosen as Virginia's only Star Station One Center. This national program is designed to build awareness of the International Space Station with the Center's demonstration, "Get it Together." Tuesdays and Thursdays 11 a.m. - 1:00 p.m. and Sundays Noon - 1:00 p.m.

Call (804) 727-0900 for show times

Visit the Center's Home Page:

<http://www.vasc.org>

Aviation & Space



Web Sites

Federal Aviation Administration:
Aviation Education

<http://www.faa.gov/education>

Federation Aeronautique Internationale <http://www.fai.org>

NASA CONNECT <http://edu.larc.nasa.gov/connect/>

NASA Langley Education <http://edu.larc.nasa.gov>

National Aeronautic Association <http://www.naa.ycg.org>

Virginia Department of Aviation <http://www.doav.state.va.us>

Virginia State EAA Fly-In <http://www.vaeaa.org/>

Calendar of Events

September 11, 1999 **8th Annual Louisa County Air Show**
will be held at Freeman Field from 11:00 a.m. - 6:00 p.m. Sponsored by the Louisa Industrial Development Authority.

September 17-19, 1999 **Neptune Festival Air Show at NAS Oceana.** Performers include the U. S. Navy Blue Angels, Canadian Forces Snowbirds, U. S. Army Golden Knights, Red Baron Stearman Squadron, Patty Wagstaff, etc. Huge Show! For more info check out <http://oceana-navy.com/airshw.htm>.

September 25, 1999 **4th Annual Wings and Wheels Show** (Hummel Airfield). The show is an antique, classic, and ultralight aircraft fly-in, and a British, European, American, and exotic car show. Check out <http://fly.to/wingsandwheels>.

October 2-3, 1999 **EAA Chapter 186 Fall Fly-In** (Winchester Airport). Aircraft displays, rides, demonstrations, judging, pancake breakfast, and children's play area. For more information call (703) 780-6329.

October 2-3, 1999 **EAA Chapter 511 Fall Fly-In** (Shenandoah Valley Regional Airport). For more information call (540) 433-2585 or (540) 867-5350.

For more events check out:
<http://www.doav.state.va.us/calendar.htm>.

Aviation Education Supporters:

VASEF projects are funded by our membership fees and by donations from our member organizations. We would appreciate your support through membership in our organization.

_____ Regular Membership \$25.00 annually (July - Dec. \$12.50)

_____ Non-Profit Organization \$25.00 annually (July - Dec. \$12.50)

_____ Corporate Membership \$100.00 annually (July - Dec. \$50.00)

_____ New Member

_____ Renewal

Date: _____

Name: _____

Name of Organization: _____

Occupation: _____

Address: _____

City: _____ State _____ Zip _____

Telephone _____

Please Return to: Tom Tyndall, VASEF Treasurer
5702 Gulfstream Road
Richmond, Virginia 23250-2422



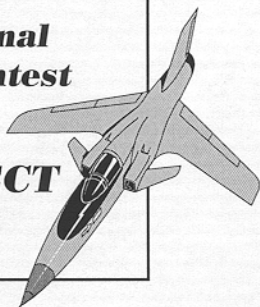
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Inside:

2000 International Aviation Art Contest

New Season for
NASA CONNECT



Please Post for Teachers